

Thus, the claims are now believed to set forth the present process invention in distinct and specific process steps.

The new generic claim 15 now specifically recites the vanadium content as from 0.02 to 0.08 wt.% as previously set out in claim 8 and as specifically supported in the present specification. In addition, the beryllium content is stated in claim 15 to be from 11 to 50 ppm, and in dependent claim 16 as from 25 to 50 ppm. Page 2, lines 21-22 specifically recites a beryllium content of from 25 to 50 ppm, and the examples in batch No. 1 specifically recites a beryllium content of 11 ppm.

New claims 17-20 are based on previous claims 9-12. New claim 21 is supported on page 3, line 15 of the specification. New claim 22 is supported on page 1, paragraph 2 and in the Examples. New claims 23-24 are based on previous claims 13-14.

The claims are rejected under 35 U.S.C. 103 as set out in paragraph 6 of the outstanding official action. Applicant respectfully submits that the amended claims define a considerable improvement in the art and are not fairly taught or suggested thereby.

As indicated on page 1 of the instant specification, the last paragraph thereof, it is known to add beryllium to molten aluminum magnesium alloys to reduce the formation of dross. However, as indicated therein an increased addition of beryllium to the melt is undesirable due to the carcinogenic properties of beryllium and therefore should be avoided.

In accordance with the present invention, it has now been surprisingly found that the addition of a combination of vanadium in an amount from 0.02 to 0.08 wt.% and beryllium in an amount from 11 to 50 ppm to an aluminum alloy melt having a magnesium content of at least 2.5 wt.% will reduce the susceptibility to dross-forming of said aluminum alloy melt, as clearly substantiated by the data in the instant specification. This represents a quite low content of both of these materials, and clearly a lower concentration of beryllium than that which would be necessary in the absence of vanadium.

Applicant respectfully submits that the cited art does not teach or suggest a process for reducing the susceptibility to dross-forming of the said melt by the specific addition of these low amounts of vanadium and beryllium enabling this reduction with such a reduced amount of the carcinogenic beryllium.

The U.S. '791 reference, for example, which is believed to be the closest cited art, discloses an aluminum alloy melt with 2.0 to 8.0% magnesium, 0.0001 to 0.01 beryllium, and at least one of 0.03 to 2.5% manganese, 0.1 to 0.5% chromium, 0.1 to 0.5% zirconium, and 0.1 to 0.5% vanadium, less than 0.2% iron, balance aluminum. As indicated in col. 4, lines 17-18 of this reference, beryllium is generally added to prevent oxidation of magnesium. Concerning the addition of vanadium, as stated in col. 4, lines 43-55, this element is effective for refining the recrystallized grains.

The grain refining effect of a vanadium addition to wrought alloys is also known from the other references. However, a procedure for reducing the formation of dross in an aluminum-magnesium alloy melt by the combined addition of vanadium and beryllium cannot at all be derived from the cited art, especially given the defined, low amounts of these materials. Applicant courteously urges that the findings of the present invention are quite surprising and unexpected. The process of the present invention is specifically defined in the claims, and the applied art fairly considered does not at all teach or suggest same.

Favorable reconsideration is courteously solicited.

The Examiner is urged to telephone the undersigned if any further questions remain.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

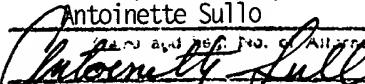
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Respectfully submitted,

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